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April 20, 2022

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Project Coordinator
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Tacoma, Washington 98402

Eric Weber
Project Coordinator
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2107 South C Street
Tacoma, Washington 98402

Re: Cow Palace Dairy Lagoon 1 Closure Report
Administrative Order on Consent ("Consent Order")
Docket No. SDWA-10-2013-0080
Yakima Valley Dairies, Washington

Dear Mr. Larsen and Mr. Weber:

EPA has completed our review of:

- Response to EPA Comment Letter 277 Regarding Cow Palace Dairy Lagoon No. 1 (February 24, 2022)
- Cow Palace Dairy Lagoon No. 1 and Safety Debris Catch Basin Completion Report ("Report," February 24, 2022)

Based on our review, EPA has these comments:

General Comments

1. EPA's observations are:

   - The Lagoon 1 secondary (lower) liner was damaged by the windstorm.

   - Cow Palace's Construction Quality Assurance (CQA) Manager correctly observed and recorded that the lower liner after the windstorm was "damaged."

   - The approved design specified that damaged liner should not be used.

EPA remains concerned about the viability of the liner system in Lagoon 1. Both the primary (upper) and secondary (lower) liners may be currently leaking liquid animal waste into the subsurface. The lower liner may fail prematurely because of the stress it endured during the "blow-out" liner event that occurred during the windstorm over Thanksgiving weekend 2019, and the subsequent attempts to repair it.

2. The CQA manager wrote in the Report that the contractor, "made the call to begin extrusion welding the repairs on the wind-blown damaged 50-mil drain liner in the dry areas of Lagoon 1," clearly using the word "damaged" here as an adjective modifying the noun "liner." Based upon the Report, including the notes and photographs taken by the CQA Manager, it is evident that the lower liner *was* damaged, and that Cow Palace's CQA Manager correctly observed that the liner was "damaged" to indicate that it was torn, displaying stress lines and wrinkling, and very dirty. In your letter you assert that the CQA Manager used the word "damage" as a noun meaning additional work that needed to be done. However, the meaning of the CQA Manager's written statement regarding damaged liner is clear on its face and contradicts your assertion.

   The approved design requires that liner material must be inspected prior to installation and if damage occurred during shipping, then it should be set aside and not used. You argued in your letter that this requirement does not apply to liner damaged by a windstorm. However, common sense suggests that liner damaged in an unexpected windstorm should similarly raise concern about risks associated with damaged liner, and that a similar course of action --- setting it aside and not using it --- would have been appropriate.

3. Your response letter makes several statements about nitrate concentrations at well DC-14 not being related to the liner installation. The rapid increase in nitrate concentrations after the lining of Lagoon 1, however, is apparent in well DC-14. Your stratification hypothesis --- that the increasing nitrate concentration after the liner installation is a function of decreasing water level --- is not supported by the data from monitoring well DC-14. From the time the dedicated pump was installed in well DC-14 until the liner blowout event occurred, the correlation between water level and nitrate concentration was strongly positive ($R^2 = +.86$). But after the blowout the correlation coefficient changed to strongly negative ($R^2 = -.94$). This switch from a positive to negative correlation is not consistent with your hypothesis that one of the variables (nitrate concentration) is dependent on the other (water level). It is consistent with an exogenous event occuring in late 2019 (most likely leakage and/or infiltration associated with the liner blowout) which caused the correlation to switch from positive to negative.

   The elevated nitrate concentrations recently observed in well DC-14 could be from leakage of liquid manure through both liners, and/or from oxygenated water (precipitation) that infiltrated disturbed, contaminated soils beneath the lagoon. Regardless, the fact that samples from the drinking water aquifer in this well were below the nitrate MCL prior to the Lagoon 1 lining project but now greatly exceed the MCL is inconsistent with the goal of the Consent Order to meet the MCL in wells downgradient of dairy sources, and with the purpose of lining the lagoons.

4. The fact that leachate levels in the sump fluctuate between monthly measurement events, even though the pump is not activated, suggests that the primary liner is leaking, and the secondary liner is also leaking. If only the primary liner was leaking, then the pump would be activated once the sump was full. This hypothesis must be tested by:

a. Filling the lagoon to maximum capacity, manually activating the sump pump, and then measuring the level in the sump daily thereafter. If the sump refills, assess whether it refills at a predictable rate. Changes over time in the rate of refilling would indicate a leak (or leaks) through the lower liner in the sump.

b. When the lagoon has been full for at least 30 days, conduct electronic testing of the lagoon to assess whether there is electrical continuity between the lagoon contents and the surrounding soil.

Specific Comment

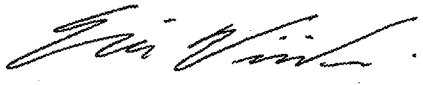
1. The revisions to Table 1 of the Report are incomplete. For example, on 4/22/20 the sump liquid level was 1.0. On 5/5/20 the sump liquid level was 22.0, which means that the "Gallons of liquid accumulated in sump since last reading" should not be zero. What is the volume of the sump between a liquid level of 1.0 and 22.0? That is the volume that should be entered in the subsequent column "Gallons of liquid accumulated....". Likewise for every subsequent inspection with a difference in sump liquid level a value should be entered in the subsequent column. Note that when the sump liquid level diminishes, which occurs between 11/9/20 and 12/14/20, the "gallons of liquid accumulated in sump since last reading" is negative, which indicates leakage from the sump through the secondary liner (since the sump pump did not activate and the sump liquid level decreased). This table must be filled out and the results discussed.

Because both liners may be leaking, the Lagoon 1 liner system must be tested to assess whether repairs are needed. Pursuant to Paragraph 14 of the Consent Order, Respondent must prepare an addendum to the CQA Plan that provides for the work described in items 4.a and 4.b above, including a schedule to promptly conduct the work, and submit it to EPA no later than May 20, 2022.

Pursuant to Paragraph 14 of the Consent Order, Respondent must address the comments in this letter, such as the required revisions to Table 1, in the next version of the Report. This letter does not attempt to respond to every argument you made in your February 24, 2022 letter, but our lack of response does not mean that we agree with all your arguments.

You may contact me at (206) 553-6904, or your legal counsel may contact Jennifer MacDonald at (206) 553-8311, if you have any questions regarding this letter.

Sincerely,



Eric Winiecki
EPA Project Coordinator
Enforcement and Compliance Assurance Division

cc: Jennifer MacDonald
Don Clabaugh